

COMMONWEALTH OF PENNSYLVANIA.  
STATE BOARD OF HEALTH AND VITAL STATISTICS.

PROCEEDINGS AND PAPERS

OF THE

THIRD ANNUAL MEETING

OF THE

Associated Health Authorities of Pennsylvania

HELD AT HARRISBURG, JANUARY 23, 24, 1896.

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EXTRACTED FROM THE TWELFTH ANNUAL REPORT OF THE STATE  
BOARD OF HEALTH.

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CLARENCE M. BUSCH,  
STATE PRINTER OF PENNSYLVANIA.  
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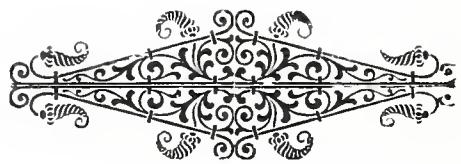
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The third annual meeting of the Associated Health Authorities of Pennsylvania was held in the Senate Chamber, Harrisburg, Thursday and Friday, January 23 and 24, 1896.

The meeting was called to order at 10 A. M. Thursday, January 23, by Mr. Crosby Gray, Superintendent of the Bureau of Health of Pittsburgh, the second vice president.

Prayer was offered by the Rev. B. B. Hamlin, D. D., of Harrisburg.

The Secretary then presented a communication from his honor, the Mayor of Harrisburg, expressing his regret at not being able to be present at the meeting, and requesting that Dr. Lee should introduce Dr. Hugh Hamilton to welcome the guests to the city.

Dr. Benjamin Lee then addressed the meeting as follows:

"Mr. President and Gentlemen: As his honor, the mayor, has requested me to introduce Dr. Hugh Hamilton, of Harrisburg, I would say to you, those who do not know him, that he is one of those physicians who does not confine his efforts to curing his patients who call upon him for his services, but also extends them to the public, and at the previous convention of the Associated Health Authorities of Pennsylvania, held under the auspices of the State Board of Health, he was present with us, and made some valuable contributions."

Dr. Hugh Hamilton's address of welcome:

The mayor of Harrisburg has deputized me to welcome you to the capital city of the Commonwealth of Pennsylvania. Therefore, in his name, I do now extend to you a hearty invitation to inspect

our streets and other municipal improvements, drawing your attention to the fact that for its size (over 50,000) and its relatively large floating population, the death rate is among the very lowest within the boundaries of the State.

"Typhoid fever is very, very rare. There are the paludal fevers, but none of severe type. We dealt successfully with a recent epidemic of small-pox by the use of practical and energetic methods, namely, vaccination and isolation. In diphtheria our progressive physicians have resorted to the most approved antitoxic treatment, decidedly reducing the death rate from this cause.

"Very likely the malarial fevers prevailing in valleys like the Susquehanna river keep one on the alert, so that our lives are stirred up frequently, thereby averting more fatal maladies. This is probably one source of the low mortality. As to our morbidity, it is in striking contrast with many other places in the Keystone State, because we enjoy the rich products that these fertile silurian valleys bestow—and we did delight in the purest water that ever fell from heaven. The past tense is used because we look to you for measures of relief from this condemned culm-laden water, through suggested legislation. It is the duty of this convention to do something toward this being stopped. It is unjust that the prior vested rights of towns should be invaded to gratify the coal industry. That culm water is healthy, I most positively deny. That if not healthy, it must be unhealthy; hence, needs to be eliminated from our food supply.

"Should the towns and cities that existed before the coal industry be compelled to pay for this vile contamination by endeavors to purify it? The voice of common sense says: No. And this convention can say no in chorus. It is evident that something must be done. We look to the Board of Health for health. Their highest office is the prevention of disease.

"Prevention of disease! That is the cry of civilization and the watchword of the future. A doctor of medicine, if given authority, is culpable for the spread of preventable disease. Small-pox is annihilated by persistent vaccination. Typhoid fever is preventable by pure water and food supply. Diphtheria is prevented by isolation and antiseptics. The cholera was restrained in its progress westward by the ratio of its intelligent prevention. Pennsylvania legally strives to prevent the blindness of infants by immediate treatment at birth. When diseases are preventable they may become totally eradicated. Think of the possibilities of wiping out 'epilepsy, consumption and the burning ague' (Leviticus xxvi, 16).

"The first step was taken in sanitation when Louis Pasteur found that organized ferment had the quality of discriminating between

physical compounds of identical composition. Pasteur, whose long life was devoted to research, and whose body was given a national burial, and whose work received the eulogium of a grateful universe,

"Briefly, you have been shown what our capital city has; we hope you will observe them and seek other facts yourselves and further, that the result of your deliberations may be for the best possible hygienic welfare. Again, in the names of the Hon. Maurice C. Eby, the mayor, for the corporation and citizens of Harrisburg, Pennsylvania, you are bidden a very cordial welcome."

The Chairman, Mr. Crosby Gray, then addressed the meeting as follows:

"Gentlemen of the Association: The next number on the program is opening remarks by the first vice president. Thanks to your partiality of a year ago, I have the honor, accidentally as it were, of presiding over your deliberations this morning. I have regrets, however, to mention. First, the absence of the honored president of this association, the Governor of this Commonwealth; second, the absence of the first vice president, Major Moses Veale, of Philadelphia; third the absence of the third vice president, Dr. Allen, of Scranton. On account of the unavoidable absence of these gentlemen, it has devolved upon me to preside over you for the present at least. I have another regret, and that is, that the attendance this morning is not what it should have been. There is no subject or question in which the people of this Commonwealth and the health authorities who look after their several welfares, are so much interested as their health, and yet we know and regret that so many of them do not appreciate the fact; and it was hoped that the health authorities of the different cities and boroughs of this Commonwealth would have been fully represented on this occasion, and we trust and hope that, before the close of the session many more will be represented. But what this association lacks in quantity is fully made up in quality. I shall have to ask your indulgence as your presiding officer; I may make mistakes, doubtless I will. If I do, I desire to beg your pardon in advance, and more than that, place the responsibility of those mistakes upon yourselves on account of you having lifted me to this position. To you, Dr. Hamilton, who have so kindly and ably welcomed this association on behalf of its chief magistrate of this city, we accept your welcome, and trust that our deliberations may be of some benefit to you as well as to the other portions of the State which we have the honor to represent. I trust that before the day passes, Vice President Veale will be present, and I have no doubt that he will have something of interest to read to your association."

The secretary then presented a communication from Dr. Leon-

ard Pearson, announcing his inability to be present and asking permission to be enrolled as an "honorary" member of the association.

On motion made by the secretary, he was declared an honorary member.

Dr. Robert L. Pitfield, assistant bacteriologist to the State Board of Health, Philadelphia, read a paper on "The Etiology and Diagnosis of Diphtheria."

The "Advantages of Bacteriological Investigations to Boards of Health," by B. Meade Bolton, M. D., bacteriologist to the board of health of Philadelphia being next in order, the secretary stated Dr. Bolton was unable to be present, but that he had sent his paper and boxes, together with circulars made use of by him in his investigations, and some of the rules and regulations governing the division of pathology in the laboratory of hygiene, bureau of health. The paper was then read by the secretary, after which the president announced discussion to be in order.

The paper was discussed by Dr. Benj. Lee, M. G. Lippert, Dr. H. H. Whitcomb, Mr. Jos. McFarland, Mr. Mays and Dr. Jos. McFarland.

Further discussion was dispensed with in order that the next paper might be taken up.

"The Relation of Slaughter Houses and Similar Offensive Industries to the Spread of Diphtheria," by A. H. Halberstadt, M. D., president of the board of health of Pottsville.

A. H. Halberstadt, M. D., Pottsville: "Mr. President, Ladies and Gentlemen: When I was written to on this subject, I felt that I was compelled to decline for the reason that I am not a bacteriologist, and I did not consider that I was capable of writing a paper of such a character. I rise now to offer a resolution.

"On the outskirts of the town in which I live, we have a pork-packing establishment. The material in connection with this establishment is not allowed to go to waste, but every particle of it is made into something of commercial value. The processes they adopt, as in bone boiling, make the neighborhood almost impossible to live in, although persons living in the locality have developed no such disease as diphtheria, it has resulted in a frightful mortality in the borough. We know that in the manufacture of these processes they use articles like sulphuric acid which would be a germicide, and it is impossible for us to determine whether there is a relation or not, except that in our community people are compelled to inhale those gases or vapors of those stinking emanations that takes one's appetite and compels the shutting up of houses in order to avoid the unwholesome smell. We think there must be some relation to disease prevalence. It was very important to secure testimony before we arraigned this packer, for he paid no attention to notices, so we in-

sisted upon those most interested getting up a petition against the pork-packer. They presented this to the board of health, which we submitted to our counsel. The nuisance was abated and the epidemic declined, but it was not long before cold weather came when people are shut up in their houses. The same nuisance exists to-day. Counsel, for money can create delay, did wear out the prosecutors until cold weather comes again, when the people are not subjected to the same nuisance.

"Some of the people in this neighborhood have had to leave their houses owing to the nuisance.

"There cannot be any doubt but what living in an atmosphere of that kind must enervate the condition of those people and render them more susceptible to any disease, not particularly diphtheria, but scarlet fever and all diseases of that class. I would, therefore, offer the following resolution:

"Resolved, That a committee be appointed to investigate the sanitary relation of emanations from slaughter houses, pork-packing establishments and similar industries to the creation and spread of diphtheria, scarlet fever and diseases of that class on a bacteriological basis."

On motion the resolution was adopted.

The next paper in order was "The Diphtheria Antitoxic Serum," by Joseph McFarland, M. D., lecturer on bacteriology, Medical Department of University of Pennsylvania, Philadelphia.

Discussions followed by Jesse C. Green, D. D. S., West Chester; H. H. Whitecomb, M. D., Norristown; C. W. Perkins, M. D., Chester; Robert L. Pitfield, M. D., Philadelphia; M. G. Lippert, C. E., Phoenixville; Maj. J. A. McLaughlin, Allegheny; S. C. Spaulding, M. D., Shenandoah.

On motion the meeting then adjourned to meet at 2.30 P. M. in the Supreme Court room.

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The meeting was called to order at 2.30 P. M. in the Supreme Court room, Mr. Crosby Gray, presiding.

The first business in order being the discussion of the papers by Drs. A. H. Halberstadt and Joseph McFarland.

Dr. Pitfield introduced the following resolution:

"Resolved, That this Association of Health Authorities of Pennsylvania recommends the antitoxin of diphtheria as a valuable agent in the prevention of the spread of diphtheria."

The secretary then offered the following amendment to the resolution offered by Dr. Pitfield:

"Resolved, That we respectfully request the Medical Society of the State of Pennsylvania to appoint a committee to report upon the value of antitoxin as a preventative of diphtheria."

Dr. H. V. Logan, Scranton: "I second Dr. Atkinson's amendment and in doing so, would simply state that we, in order to make the investigation thoroughly would have to go to considerable expense."

There being a division, the ayes were thirty-seven against ten nays. The resolution as amended was then adopted.

The Chair then addressed the association on the paper of Dr. McFarland.

The report of the executive committee being next in order, the chairman, Dr. Lee, presented his report, which was received and filed.

Report of the committee on publication, Moritz G. Lippert, C. E., chairman, was then presented and received and ordered to be filed.

Report of the committee on legislation was presented by Captain C. P. Weaver, in behalf of A. M. Beitler, Esq., chairman. It was received and ordered on file.

The report of the special committee on teaching hygiene in public schools was then in order, and Dr. George G. Groff, the chairman of that committee, made his report:

Dr. H. H. Whitcomb, Norristown: "This report has largely been gotten up through the earnest efforts of the chairman, and it seems to be wise to continue him in this good work looking after these books, and I move that the report be received and the chairman be continued in the work."

Dr. Benjamin Lee, Philadelphia: "I desire to amend Dr. Whitcomb's motion, to make it read 'that the committee be continued,' instead of the chairman. The subject is an important one, and I think the entire committee should be put in."

The report was accepted and ordered to be published, and the committee continued.

Report of the special committee on preparing a code of health laws, Crosby Gray, Esq., superintendent bureau of health, Pittsburgh, chairman.

The report of the special committee on preparing a code of health laws being next in order, Dr. Lee took the chair, and the chairman reported that on account of a misunderstanding there had been no conference during the past year of that committee.

On motion it was ordered that the committee on codification of the health laws of the State be continued with Mr. Crosby Gray as chairman, with instructions to add as many others as necessary.

On motion of Dr. Lee it was

**Resolved**, That the Associated Health Authorities of Pennsylvania endorse the movement on the part of the State Board of Agriculture and the Forestry Commissioner towards setting apart reser-

vations in this State for the protection of forests as a means for securing a purer water supply.

Dr. Lee: "It has been wisely said by a Western sanitarian that what we want in our drinking water is 'innocence' and not 'repentance.' Filtration is good, but how much better it would be to have water that needed no filtration. There is no question that setting apart large areas of forest lands will be a great step toward the securing of a pure water supply."

Dr. Robert S. Maison, of Chester, then offered the following resolution:

Resolved, That a committee of three be appointed to consider the relations between the County Health Associations and the Associated Health Authorities of Pennsylvania, to report at the next meeting.

The resolution was, on motion, adopted, and the following committee appointed:

R. S. Maison, M. D., chairman; Benjamin Lee, M. D., Moritz G. Lippert, C. E.

Dr. Groff presented his report on sanitary legislation, which was received and filed and the association adjourned until evening.

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#### Evening Session.

Prof. Francis C. Phillips, of Allegheny, read a paper on the "Protection of Water Supplies."

Paper discussed by Drs. Lee, Maison, Mr. Leighner, Lippert and others.

E. S. Wagoner, Mechanicsburg, then offered the following resolution:

"Resolved, That in the matter of water ways this matter be referred to the legislative committee, with full power and authority to investigate and if necessary report at the next meeting of this association."

Dr. Lee: "If that committee is to accomplish anything with the next legislature, Mr. Chairman, it occurs to me that it will be a little late for it to report at the next meeting of the association. Such a bill ought to be introduced the moment the legislature meets, and I would, therefore, amend the resolution by instructing the committee to prepare and present the bill without reference to the association." The amendment was accepted and the resolution adopted.

The meeting then, on motion, adjourned to meet Friday morning at 10 A. M.

Friday, A. M.

The meeting was again called to order at 10 A. M., Friday, January 24, 1896, Mr. Crosby Gray presiding.

A communication was presented by the secretary announcing the inability of Dr. Pemberton Dudley, of Philadelphia, president of the State Board of Health to be present.

The first business of the day was the paper by Dr. Benjamin Lee on the law of 1895, for the restriction of contagious diseases. Dr. Lee addressed the meeting as follows:

Mr. President and Gentlemen: Probably the most important legislation that has been accomplished in this State for the protection of the public health, after the establishment of boards of health in cities and boroughs, has been the act passed on June 18, 1895, for the better protection of the public health, which was in effect establishing a complete code for the State of Pennsylvania, for the restriction of contagious diseases. It affects not only cities and boroughs as incorporated municipalities, but it affects also townships, because we have had decisions both previous to and since the passage in that act that a township is a municipality. It is incorporated, and, therefore, as this act by its title refers to the municipalities of this Commonwealth, it is considered to refer to rural districts as well as to cities and boroughs.

"Heretofore, in this State, there has been an entire lack of uniformity in the regulations of different cities and towns in this important matter. Each borough has adopted its own ordinances with regard to quarantining, disinfecting and every other point in connection with the management and restriction of contagion; but from and since the passage of this law that has been changed, and every city and borough in the State will have exactly the same ordinance on these subjects. It does not matter at all what councils say in regard to this. They may adopt any ordinances that they please, but if those ordinances are not in strict conformity with this law they are null and void. It may be said, however, that boards of health are authorized by this law to make more stringent regulations than those in the law with regard to diseases specified in section four of the act. Thus, the very annoying dependence of boards of health on councils for carrying out their regulations with regard to the restriction of contagion no longer exists. Boards of health in this respect now occupy the position they ought to in all respects, as independent departments of the city or borough government.

"I trust that the time will come when the board of health will stand in this relation, and that it will not be in any way dependent on the councils, either for its support or for an endorsement of its regulations. This is certainly a very important step in that direc-

tion. In section nineteen of the act we find a general grant of power. This section reads:

"The health authorities of the several municipalities of this Commonwealth shall, and they are hereby authorized and empowered to establish rules and regulations regarding the isolation of persons who may be suffering from any of the diseases mentioned in section four of this act, and for the destruction, disinfection and fumigation of bedding, clothing or other infected articles, and for the disinfection and fumigation of houses and premises, and for the carrying out of the provisions of this act, as they may in good faith declare the public safety and health demand, which rules and regulations they may from time to time alter or amend."

"It is difficult to conceive of a more complete grant of power than this section conveys, and you will observe that nowhere in that section or anywhere in this act, is there any reference whatever to endorsement by the councils. This act is obligatory and mandatory in every respect except one; boards of health are not only authorized to enforce its provisions but they are commanded to; and the suggestion of the State Board of Health would be that each local board shall adopt regulations which shall in every respect repeat and conform to the words of this law. The State Board of Health has taken pains to bring itself in harmony with the law by adopting a regulation which enables the State Board to enforce its provisions all through the State in the rural districts, and I can conceive of no better plan for the local boards than to adopt this law in full as their regulations, and in any instance where deemed advisable, as the law authorizes, to add to the regulations herein such as they deem necessary for the protection of the public health.

"The only matter which is left optional to local boards is whether they shall or shall not placard houses in which contagious diseases exist. This was left optional principally in deference to the request of the board of health of Philadelphia, which in many instances has preferred to establish guards over houses rather than to placard, although I may say as a matter of information that during the last year the board of health of Philadelphia, influenced, I have no doubt by the fact that boards of health of smaller cities were so generally adopting the precaution of placarding, has in a number of instances followed the same plan.

"Another plan has been adopted by many local boards, that of hanging out a flag instead of using placards. The State Board of Health considers that is a decidedly inferior line of precaution. It is true that people after while will learn what the color of a certain flag means, but if the moment a person is about to enter a house he is confronted with a statement in big black letters 'smallpox in this house,' it really has rather a different impression than that of a

flag. We conceive, therefore, that the placard is a much more efficient form of protection, and we strongly recommend it to every local board. There is a great objection made to placarding by many persons that it may create a panic, and the same objection is made to the declaration of the fact that a disease is epidemic in a town or city. This, I have no doubt, has its origin from purely commercial consideration. Those who are afraid of a panic are those who are afraid that their business will be injured. They are those who do not look upon the matter from any other than pecuniary grounds, and on that question I do not think their objection should be respected.

"I, myself, however, believe that the idea is altogether a mistaken one, and that a panic is to be avoided not by allowing the newspapers to publish whatever they please about conditions which may prevail, but by furnishing the papers exact facts; stating exactly how many cases of any infectious disease exist in any city, where they exist and exactly what precautions are being taken by local authorities. With such statements before them the people feel that their interests are in good and safe hands, and do not allow themselves to get into a panic. The theory which has been so largely promulgated, that the infection is promoted by panic and that people die because they are frightened has no better origin or basis than an old Astiatic fable, which you have all doubtless read, in which the Angel of Death is represented as making his appearance to a sage, and the sage attacks him because he has infected the place with pestilence. The Angel of Death makes reply that he is not the responsible party, and introduces another terrible figure under the guise and name of Panic, and states that he is the individual who is causing the deaths.

"Now, I venture to say, if you take ten men, five of whom have been vaccinated and five who have not been vaccinated, but who say they are not afraid of smallpox, and subject all those men to the same risk of taking smallpox, the five who have been vaccinated will be those who escape, and the five unvaccinated will be the ones who take smallpox, no matter how stoutly they may declare that they are not afraid of it.

"Boards of health need never be afraid that any action which they take will create a panic.

"I beg all boards to remember that this law imposes duties upon them as well as upon the community, on physicians and other responsible persons. The regulation which directly refers to parties being held responsible is section twenty-one, which reads as follows:

"Any physician, undertaker, principal of a school, superintendent of a Sunday-school, sexton, janitor, head of a family or any other person or persons named in this act who shall fail, neglect or

refuse to comply with or who shall violate any of the provisions or requirements of this act, shall, for every such offense, upon conviction thereof before any mayor, burgess, alderman, police magistrate or justice of the peace of the municipality in which said offense was committed, be liable to a fine or penalty therefor of not less than five dollars or more than one hundred dollars, which said fines or penalties shall be paid into the treasury of said municipality, and in default of payment thereof, such person or persons so convicted shall undergo an imprisonment in the jail of the proper county for a period not exceeding sixty days.'

"Although I would call attention to the fact that in many of the sections there is a statement at the end of the section that certain parties are responsible for the enforcement of the regulation, as for instance in section nine, with regard to burials: 'The undertaker and the person or persons having charge of the premises shall be responsible for any violation of the provisions of this section;' I beg boards of health to remember that they are 'named in this act,' and that the duties which it imposes are incumbent upon them, and it is important to give it careful study in order that they may not become amenable to penalty under its provisions. Under those provisions it becomes necessary for them to furnish blanks in certain cases. Other laws which have been passed, as that establishing a State Board of Undertakers, and that providing for the registration of plumbers, also making it necessary for local boards of health to furnish blanks for registration of the parties therein named.

"The State Board of Health is about issuing a circular in connection with which there will be forms which local boards at their pleasure may adopt.

"Certain officers, justices of the peace especially, are forbidden to serve on boards of health. The question has often been put whether this includes members of school boards. The State Board has obtained legal advice to the effect that members of school boards are eligible to positions on local boards of health.

"I do not know that there are any other points in this law which it is especially necessary to call attention to at the present time, but if there are any points which suggest themselves on which I can throw any light, I shall be very happy to do so."

Mr. Gallagher, Allentown, asked if a physician located or practicing in any municipalities of this Commonwealth could be compelled to report a case that he might have in suburbs of that municipality.

Dr. Lee replied "that he did not think that a physician could be compelled by the board of health of the borough to report a case existing outside of the limits of the borough. The duty of that physician would be, if the State Board of Health had a representa-

tive in that township, to report to him. Otherwise, his duty would be to report directly to the State Board of Health, but the local authority could not compel him to report to it."

Dr. Logan, Scranton, then asked what would be the duty of the authority could not compel him to report to it."

Dr. Lee replied as follows: "This brings up a matter which may, perhaps, not be generally understood, which is that, in default of any provision by the legislature for local authorities outside of incorporated boroughs and cities, the expedient has been adopted of appointing 'deputy inspectors to the State Board of Health.' These have been appointed for one, two, three or more townships as the case may be, usually directly contiguous to an incorporated borough, and these inspectors are authorized to placard, quarantine and disinfect in the name of the State Board of Health. Their instructions are to go ahead and do what is necessary, and then report. The great obstacles, however, to efficient service of that kind is that there is no provision for meeting the expenses of such action. There is no provision for providing for the wants of those who are in quarantine. There is no provision for the purchase of disinfectants or for the employment of guards. Consequently it must be confessed that it is to a certain extent a paper quarantine. In such instances the State Board of Health is fully convinced that it is not only within the province of the poor directors and county commissioners, but it is their duty to enforce quarantine, and provide for persons thus unfortunately cut off. In several cases this they have positively refused to do.

"I have recently received a communication from one of the county inspectors who states this matter at length as well as the great difficulties which he has met with in attempting to carry out his duties, and I think Dr. Maison, of Chester, county medical inspector for Delaware county, will be kind enough to give us his experience in this respect."

Vice President W. E. Allen, M. D., was called to the platform.

Dr. Robert S. Maison, of Chester, in response read a paper on "The Necessity of an Increased Appropriation to the State Board of Health," sufficient to enable it to quarantine and disinfect contagious diseases in places having no health authorities, by employing guards and furnishing disinfectants, etc., when necessary, and called attention to the difficulty experienced by him in quarantining and providing for diphtheria patients near Media during the past summer, where the poor directors refused to do anything towards their support or to employ necessary guards. He then presented the following resolution.

Resolved, That the committee on legislation be instructed to

confer with the boards of health of this State, asking them to use their influence to induce the legislature to increase the annual appropriation to the State Board of Health, and to prepare and present a bill to this effect at the next session of the legislature.

Mr. James H. Harlow then amended the resolution by adding "to increase the powers of the State Board of Health."

The resolution was then read as follows:

**Resolved**, That the committee on legislation be instructed to confer with the boards of health of this State, asking them to use their influence to induce the legislature to increase the annual appropriation to and the powers of the State Board of Health, and to prepare and present a bill to this effect at the next legislature.

The question then being asked as to the "five mile limit of boards of health," Dr. Lee replied as follows:

"This question is one that has often been suggested. I do not think that any such power exists in a local board of health, as that its jurisdiction extends five miles beyond its borough limits. The act establishing boards of health in cities of the third class does authorize those boards in cases of severe epidemics to establish quarantine five miles outside of their city limits. That, I think, is only intended in cases where there is an epidemic in a neighboring city at a distance; an epidemic alarming in its proportions, as for instance Asiatic cholera or a serious epidemic of smallpox. In such cases, any city of the third class can establish a line of quarantine five miles outside of its own limits, but that does not give that board authority to establish domiciliary quarantine whenever it pleases outside of its own limits.

"That provision has been carelessly interpreted by many borough boards of health, who appear to think that it refers to borough boards as well as boards in cities of the third class, and also think that it includes the right to abate nuisances as well as to enforce quarantine. They therefore say, that anywhere within five miles of their limits they can go and shut up slaughter houses and soap factories, and perform any duty of that kind. That is an entire misapprehension, and any board which attempts to perform such work may get itself into trouble.

"The most effective means to prevent the introduction of contagious diseases from neighboring villages would be to notify the residents of the infected locality, that any of them appearing within the limits of the borough would be immediately arrested. Let this notice be published in the papers, and also let it be posted by local authorities. In this way the information will be quickly disseminated, and the people of the locality will know that the moment they enter the city they are under arrest, and you will effect just as much as though you placed armed guards at the gates of your city."

Mr. Jas. F. Gallagher then offered the following resolution, which was on motion adopted.

Resolved, That the State Board of Health be requested to appoint its deputy inspectors in accordance with the wish of the local boards.

Mr. M. G. Lippert then presented a communication which had been addressed to him by the president of the Association of School Directors of the State of Pennsylvania (H. H. Quimby) with regard to the construction of school houses and their hygienic management, and moved that the letter be referred to the State Board of Health with the request that that body should comply with the suggestions contained therein.

Dr. Lee, Philadelphia: "I desire to state in this connection that the State Board of Health already issues circulars with regard to the construction of school houses and their hygienic management. It has two circulars on this subject, one addressed to school directors and one addressed to school teachers. It has in mind the revision of both of these circulars at an early date, and it will be very glad to have this matter referred in order to make it a basis of further action. I take great pleasure in saying that the Superintendent of Public Instruction, the Reverend Dr. Nathan C. Schaeffer, is also in harmony with the State Board of Health in this matter, and in many instances he has aided us in the distribution of the circulars referred to."

On motion of Moritz G. Lippert, C. E., it was then .

Resolved, That the letter from Mr. H. H. Quimby, president of the Pennsylvania School Directors' Association, be referred to the State Board of Health of Pennsylvania with the request that that body comply with suggestions as contained therein.

The question of abating nuisances caused by disposing of garbage at Morrellville, dumping it into streams and thus polluting the water supply was then brought up, to which Dr. Lee made the following reply:

"In the absence of any law to protect streams in this State, the nuisance complained of can only be proceeded against under the general law of nuisances. That is also the case with regard to nuisances existing outside of the borough limits.

The next paper in order was "The Production, Transit, Etc., of Milk," by E. O. Shakespeare, of Philadelphia, read by Dr. Atkinson. This was discussed by Mr. Lippert and others.

On motion, it was then

Resolved, That a bill be prepared by the legislative committee and presented by that committee at the next session of the Legislature, providing for pure milk.

New business being in order, the report of the special committee appointed to consider the relations between the county health as-

sociations and this association, with Dr. R. S. Maison as chairman, was received.

On motion of J. G. Shoemaker, M. D., of Phoenixville, it was

Resolved, That the associated health authorities of Pennsylvania shall meet annually at the call of the executive committee and the place of meeting shall be the capital of the State in the years when the Legislature is in session, and in intervening years the meetings may be held elsewhere as the executive committee shall direct.

M. G. Lippert, C. E., Phoenixville, then offered the following amendment to the by-laws in regard to associate members, which was on motion adopted.

Associate Members.—“Associate members may be those formerly members of boards or bureaus of health, whether represented or not in this association or those now members of such bodies, not represented in this association; or those having any official connection with State or local health authorities without being members of the same. Their annual dues shall be one dollar, and they shall be entitled to participate in the discussions at the meetings of the association, and to receive copies of the printed proceedings and of all other publications of this association, but they shall not be entitled to vote.”

Dr. Jesse C. Green then presented his report as treasurer of the association, which was as follows:

#### Treasurer's Report.

Jesse C. Green, as treasurer of the Associated Health Authorities of Pennsylvania, submits the following report ending January 24, 1896:

To cash received from boards of health, .....	\$241 57
To cash received from associate members.....	4 00
	<hr/>
	\$245 57
	<hr/>
By cash paid for stationery, printing and postage,.....	\$177 83
By cash paid janitor of Supreme Court room,.....	13 25
By cash paid chairman legislative committee, expenses at Philadelphia meeting, .....	10 00
	<hr/>
	\$201 08
	<hr/>
Balance in treasurer's hands, .....	\$44 49
	<hr/>

Dr. Benjamin Lee, chairman of the executive committee, acting as an auditing committee, reported this as correct.

On motion, the reports of the treasurer and auditing committee were received and ordered to be filed.

Mr. D. Rhine Hertz, of Ephrata, then moved that a committee of three be appointed, to which questions could be referred by local boards.

The motion was carried, and the chair appointed the following committee:

Benjamin Lee, M. D., Philadelphia, chairman; Major Moses Veale, Philadelphia; A. M. Beitler, Esq., Philadelphia.

The annual election of officers being now in order, nominations were made and the following persons were elected:

President—His Excellency, Daniel H. Hastings, Governor of Pennsylvania, ex-officio.

First vice president—Crosby Gray, Pittsburgh.

Second vice president—J. S. Hunt, M. D., Easton.

Third vice president—A. M. Sloan, Esq., Greensburg.

Secretary—Wm. B. Atkinson, M. D., Philadelphia, 1400 Pine street.

Treasurer—Jesse C. Green, D. D. S., West Chester.

The chairman then announced the following standing committees for the ensuing year:

Executive.—Benjamin Lee, M. D., Philadelphia; C. P. Weaver, Norristown; J. G. Shoemaker, M. D., Phoenixville; A. H. Halberstadt, M. D., Pottsville; Major J. A. McLaughlin, Allegheny.

Publication.—M. G. Lippert, C. E., Phoenixville; W. H. Ford, M. D., Philadelphia; James H. Harlow, C. E., Edgewood; Wm. B. Atkinson, M. D., Philadelphia; Benjamin Lee, M. D., Philadelphia.

Legislative.—A. M. Beitler, Esq., Philadelphia; Major Moses Veale, Philadelphia; C. S. Martin, M. D., Allentown; A. M. Sloan, Greensburg; A. H. Strickler, M. D., Waynesboro.

Committee on Relation of Slaughter Houses and other Offensive Industries to the Spread of Diphtheria.—A. H. Halberstadt, M. D., Pottsville; H. H. Whitcomb, M. D., Norristown; Robert S. Maison, M. D., Chester; Jos. F. McFarland, Esq., Washington; J. M. Leighner, Esq., Butler.

On motion, it was ordered that the legislative committee prepare and present to the next session of the Legislature for enactment, an amendment to the act of May 11, 1893, establishing boards of health in boroughs, providing for the appointment and support of such boards of health in such a manner as to make them independent from the councils.

Mr. Crosby Gray, chairman: "I beg to say that the meeting of the association on this occasion, while not as large as was hoped for, has been an exceedingly interesting one to me at least, and I hope and believe that it has been productive of much good. Let us go home, gentlemen, with a high resolve, let others do what they may,

we will endeavor to the best of our ability to serve the public in the capacity in which we have been placed, and return at the meeting next year able to report that good work has been done.

"Personally, I desire to thank you one and all for the courtesy which has been extended to the chair during these sessions to one totally unprepared for exercising the duties. I desire to thank you for your appreciation of myself in having your unanimous support for the position of first vice president.

"I desire to bid you all farewell, and hope to see not only all present to-day, but very many more as well, one year from now. If there be no further business, the session will close."

On motion, the meeting then adjourned sine die.

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#### THE BACTERIOLOGICAL STUDY OF THE ETIOLOGY AND DIAGNOSIS OF DIPHTHERIA.

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By Robert L. Pitfield, M. D., Assistant Bacteriologist State Board of Health of Pennsylvania.

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The last fifteen years in the annals of medicine have been exceedingly interesting, and much has been learned whereby the cause of humanity has been furthered in its ceaseless struggle with disease.

The period is interesting to us because early in it began the real and scientific study of diphtheria, since in 1883 Klebs first described the bacillus of diphtheria and a year later Löffler confirmed the description by isolating it and inducing with the bacillus the same disease in lower animals.

And further the history of this study has been remarkable, not only from the scientific data obtained, but from the fact of its completeness; during that time, not only the cause or etiology has been made known, but good working methods of absolute diagnosis have been developed, and lastly a real, specific cure has been discovered, tried and found to be good—namely, the antitoxin method of treatment of which the limitations of this paper permit but little more than mere mention.

With the announcements by Roux and Behring that the diphtheria antitoxin made coincidentally by them is a true specific for this disease, and the continued confirmation of their statements by

men who have tried this method, there is rounding out the completion of one of the most interesting and valuable chapters in the science of medicine. And not only has science been enriched but humanity as well, and this discovery has infinitely more import for happiness and general welfare to countless families than the discovery of new worlds or other elements in the atmosphere of ours.

Medical men may view with pride this last quarter century, since in that time medicine has advanced to larger spheres than has almost any other branch of science. Chemistry to-day is on the verge of a revolution, but medicine sits more firmly enthroned on her foundations.

Much has been done to render lighter human suffering and the methods of diagnosing diphtheria and its treatment rank next to the method of antiseptic treatment of wounds, which is the greatest boon humanity has known in years.

I shall dwell at first on the technique of diagnosing diphtheria since this will give you an insight into the cause of the disease, the bacillus, which intimately concerns the etiology. This organism is a slender little rod, varying greatly in size, shape and internal structure, and because of the variability we are able at once almost to recognize it.

It is often club-shaped, with rounded ends, and with a slender middle; again, it is spindle-shaped with pointed ends. The shape and general morphology vary greatly with age and conditions of growth, such as the chemical reaction of its food. It grows on solid media, in little greyish colonies, which are rounded, with irregular edges and are like ground glass, in that they do not reflect the light.

If it is stained with an aniline dye, various parts of the organism take up the color with varying intensity, parts being stained very deeply, others hardly at all; this gives a very characteristic appearance to the bacillus. Often if a blue dye is used, black points appear in its continuity which do not transmit light. The bacillus has not power to move independently, nor does it form spores. It grows best at the temperature of the body and exposure to heat above 58°C. kills it in a very short time. It has never been found "wild"—that is it is a strict parasite and differs from some other pathogenic bacteria in this way. Cholera, for instance, exists normally in certain waters, all the year round, as a native.

The native home of the bacillus is the human mucus membranes, especially those of the throat from which it may escape by coughing, by saliva, by contact with spoons, forks, cups, handkerchiefs, or by kissing. Besides living in the human throat, the air passage of chickens, kittens and other birds and animals, may contain the bacilli, inducing in them a true diphtheria, which often causes death.

It is rarely found in the air and thrives best in moist places, especially if warm and dark, as is the human throat.

It readily grows upon a culture medium devised by Löftler, and for diagnostic purposes this is the best. It is called the Löftler blood serum mixture.

This is prepared by collecting the blood from an ox in a clean sterile jar, which has been slightly warmed, and after the clot has formed, the fluid part or serum is drawn off in sterile pipettes.

This serum is then mixed with bouillon in the proportion of one part bouillon to three of serum; the former containing 1 per cent. of glucose. After this has been done, a little of the mixture is run into sterile test tubes which are plugged with cotton wool, then they are placed in a hot chamber at a temperature of 78°C., in such a way as to slope the surface of the serum and make a large surface, oblique to the sides of the tube.

These tubes are kept in the serum apparatus for an hour or more, until the serum is coagulated into a firm translucent jelly, then they are sterilized for three consecutive days in a sterilizer for twenty minutes each day in order to kill off all stray bacteria, which may have gotten in the media or tubes.

To make a diagnosis of diphtheria a sterile swab which has been kept in a sterile test tube is firmly and freely rubbed over the membrane in the throat and this gently rubbed over the moist surface of the serum. And then the tube is carefully replugged with the cotton and put in an incubator and kept at the temperature of the body 37°C. for twelve or more hours. At the end of this time, if the case be diphtheria, over the surface of the serum will have crept a fine delicate frosting consisting of raised beads, huddled close together, these are of a greyish color, semitranslucent and are heaps of diphtheria bacilli which have grown on the serum.

With a delicate flattened piece of platinum wire, well flamed, a few of these frosted heaps are lifted off the serum, and gently rubbed on the surface of a clean cover slip, on which a drop of water has been deposited. And then after thoroughly drying and fixing this film on the slip, it is stained with an alkaline solution of methyl blue. After mounting and the lens brought to bear on it, the field will be found full of delicate little rods lying in all directions, often in clumps of a dozen, or singly.

By careful study the organism is seen to vary greatly in size and general appearance, but as I have said before this difference in morphology is really of great service to the bacteriologist in identifying it. This and the fact that the organism takes the stain in varying intensities throughout its protoplasm, enables one to make the diagnosis; especially if the culture to the naked eye appears normal. The diagnosis is best performed if the swab is rubbed over the

membrane before any antiseptics have been used in the throat since these greatly hinder the growth, often delaying it, or rendering it very uncertain.

We are likely in this examination to find many other organisms such as yeast, moulds, and many other bacteria, especially the staphylococcus, aureus and albus, which often cause abscesses and other inflammations, and another called the streptococcus pyogenes which strongly imitates the diphtheria bacillus, not only in producing a membrane, but in its cultural appearance on blood serum, it produces the same frosting, only a little whiter, but under the microscope it is seen to consist of a chain of little rounded bodies called cocci; these are in some way held together, and there often is a string of from 8-16. This organism is also the cause of many inflammatory diseases as erysipelas, puerperal fever, septicaemia, and is supposed to be the cause of scarlet fever. Many apparently simple sore throats both with and without a membrane are caused by it.

As the bacillus of diphtheria develops in the throat, it produces a poisonous alkaloid or toxin, which penetrates the cells of the mucous membrane and the protoplasm of these it coagulates, causing them to swell up and turn white as they die. This is the origin of the yellowish, dirty white membrane, from which the disease takes its name. This membrane is full of all sorts of organisms, very largely the diphtheria bacillus. Often the membrane mechanically interferes with breathing, especially if it grows in the larynx and very frequently in young children and even adults causes death by suffocation. The poison unfortunately penetrates not only the mucous membranes, but the tonsils, the lymphatic glands of the neck and finally the whole system, causing fever, depression with rapid pulse and as it advances produces often paralysis of important nerves, not only of the limbs, but of the circulating apparatus and the diaphragm; the heart is often overwhelmed by the poison, and death in this way results from acute poisoning or toxæmia. If the toxin is collected from old cultures, by filtering off the germs, it will produce the same effects if given in large enough doses by injection to small animals; four drops will kill a guinea pig in 24-48 hours and yet no germs were injected.

The worst cases of this toxæmia are those in which there is a mixture of the diphtheria bacilli and the streptococci of which I spoke. The toxins of both are absorbed and the patient often succumbs to a double poisoning.

Serum tubes in a large bacteriological laboratory often show besides the pure cultures of diphtheria and streptococcus, a mixture of both.

By means of these tubes we are enabled to say if a case is diphtheric alone or a mixed infection. Many epidemics of simple sore

throat are caused by this streptococcus, often they resemble diphtheria by having a membrane.

The diagnosis of diphtheria by cultural means is of great importance in those cases where the precious remedy antitoxin can be employed, there are many cases of sore throat simulating diphtheria which are really but simple, follicular tonsillitis in which employment of antitoxin is useless. A physician can then record a real cure by antitoxin if a bacteriological diagnosis verifies this.

The importance of diagnosing diphtheria by this method is emphasized by the following which I quote from an article by Dr. Bissell, of Buffalo, in the Medical News:

"It is generally admitted by all clinicians of experience, that it is often impossible to make an accurate diagnosis either from a clinical or anatomical lesion or from both. There are no constant differences that separate the simple non-contagious forms of inflammation from the diphtheritic type and it is but a very small proportion of cases that an early reliable diagnosis can be reached by any data obtainable. This was conclusively demonstrated in the examination of suspected diphtheria cases under treatment at the Willard Parker Hospital, at New York City, where the diagnoses were made by department diagnosticians and confirmed by the best medical talent. Subsequent bacteriological examinations in these cases revealed that from 30 per cent. to 50 per cent. were not diphtheria but maladies of a non-infectious character.

Appreciate sending a case of follicular tonsillitis to a hospital and having it placed in a ward with diphtheritic patients. This person with reduced vitality is exposed to one of the most dreaded diseases when suffering from a malady to which hardly one in twenty-five succumbs.

Bacteriologists in Europe and America give a combined report of examinations in 8,186 suspected cases in which the bacillus of diphtheria was found 5,943 times or in 72 per cent.

Diphtheria has always been a disease to which children have been subject by reason of a weaker system. Children are often attacked with what older men called membranous croup, which is a mild diphtheria killing the subject more by suffocation than by poisoning. I should like to hazard the opinion, that this same organism which causes the croup in young children often exists in the adult throat without producing any disease other than perhaps a temporary headache and fever.

The character of the disease in epidemics varies greatly as it does in individual cases reaching a low grade of virulence and producing perhaps a croup or malaise depending on the age of the patient or rapidly ascending the scale of virulence and in a case exposed capable of inducing a fatal attack of diphtheria. Croup occurs during

an epidemic of diphtheria frequently and diphtheria can be caught from croup. Some systems are capable of throwing off infection easily, because their high vitality antagonizes the bacilli and its poison and in these cases no membrane forms. Physicians often in treating a case of diphtheria in a family find that other members of the household than the patient are affected with a sore throat, without a membrane forming, in such cases bacteriological methods would demonstrate the bacillus of the disease. These mild cases are capable of producing a virulent diphtheria in others.

Dr. W. H. Welch, of Johns Hopkins University, in a recent article in the American Journal Medical Sciences, quotes from the work of Dr. Park, of the New York Board of Health. He says "that in thirteen families where no isolation was undertaken, when one member was ill of the disease, and in which there were 48 children, and apparently well; 50 per cent of them had diphtheria bacilli in their throats and 40 per cent developed diphtheria. In families where strict isolation was practiced, less than 10 per cent. had any bacilli. Park says: "All members of an infected household should be regarded as under suspicion, and in those cases where isolation is not enforced, the healthy as well as the sick, should be prevented from mingling with others until cultures or sufficient lapse of time give the presumption that they are not carriers of contagion."

The bacillus does not survive for a very long time outside of the human body; it is very easily killed by heat, sunlight and chemicals. It is spread more by direct contact than the air, and has never been found in the emanations from dead animal matter or in sewer gas.

Dr. Welch, in the same article, says: "We possess no evidence that bacillus of diphtheria finds a natural home outside of the human body, although it may survive for months on objects outside of the body. Park found living diphtheria germs on bits of membrane dried for seventeen weeks and in blood serum cultures seven months old. A small epidemic of diphtheria in my practice I traced to a game of marbles, five children engaged in the game; all were stricken with the disease and two died; the father of one of them told me that the children breathed on the marbles or held them in their mouths. One child doubtless had the disease and communicated it to others. Slates often convey the disease in schools. Emerson and Wright found the diphtheria germ in a ward for diphtheria patients in the dust, beds, pillow-cases, on the hair and shoes of nurses."

Diphtheria is caused by contact with a case or some article of furniture or utensil that another person has handled. Think of the things children put in their mouths—it is the first thing a child learns to do; any object from a marble to their own maybe dirty fingers, and these may have handled a rail, or chair, or handkerchief

that had on it diphtheria discharges. Children frequently trade chewing-gum, partly sucked candy, or apples partly eaten.

All of these things may have been handled also by persons supposedly well. To-day apparently well people are walking our streets in whose throats diphtheria bacilli can be demonstrated and yet they complain of no symptoms and have no objective signs as membrane or enlarged tonsils.

Drs. Park and Beebe, of New York, examined the throats of 330 persons with no history of contact with diphtheria; they found non-virulent but characteristic diphtheria bacilli in 24 cases, virulent ones in 8; the virulence was tested by inoculating guinea pigs. Five of the eight virulent cases came from an asylum in which cases of diphtheria occasionally developed from time to time. One of the remaining came from a house where supposed croup existed 3 weeks previously. Two of the eight children developed diphtheria subsequently. From such cases the disease can be easily transmitted by kissing or by handling an envelope sealed by the lips of such a one.

Now we take up one of the most important phases of the disease from a hygienic standpoint. It has been repeatedly found that after the disappearance of the membrane the bacilli still persist in the throat and are capable weeks after of causing the disease in others.

Welch says, quoting Park, that in examining 752 cases, he found in 325 cases there was an absolute disappearance of the bacilli at the end of 3 days, after the clearing up of the exudate; in 427 cases the bacilli persisted a much longer time; in 201 cases from 5-7 days; in 84 cases, for 12 days; in 69 cases, 15 days; in 57 cases, 3 weeks; 11 cases, 4 weeks; 5 cases, 5 weeks; and in one case, since reported, the bacilli persisted 7 months in the mouth of the patient after disappearance of the membrane. In these cases of persistent bacilli in the throat, cultures were made in the bouillon and injected into guinea pigs. Of 14 pigs, 8 died within 40 hours after infection, the others died in from 3-14 days, one survived after having a large sloughing sore at the site of inoculation. This shows that the bacilli are capable of causing disease long after the membrane disappears. I have no doubt that many human lives have been lost by the physician innocently allowing convalescent cases to mingle with well ones, when the throats of the former were charged with bacilli. A word in regard to treatment of these cases: Dr. B. Meade Bolton, bacteriologist to the Philadelphia Board of Health, tells me that those cases in which Löffler's solution have been used recover sooner and the bacilli disappear earlier than in any other form of treatment.

The practical deductions from all this are manifestly simple. No one is capable of diagnosing 100 per cent. of his cases of sore throat without bacteriological aid. My fellow practitioners tell me that

antitoxin may be good; but their mortality in diphtheria is but 8 per cent. to 10 per cent., whereas antitoxin affords recovery in all but 16 per cent. With all due respect to my fellow doctors, I am convinced that they err in positive diagnosis and a cured follicular tonsillitis poses as a cured diphtheria, since they have not had opportunity to apply bacteriological diagnosis.

This method of diagnosis is valuable where antitoxin is to be employed, it is a very valuable adjunct to prophylaxis, as well as in studying etiology. To sum up, I would say:

1. All cases of suspicious sore throat should be examined by cultural means.
2. All other members of the same family in which the case occurs should also be examined by the same method.
3. All cases should be carefully quarantined until a secondary cultural examination shows the throat to be free from bacilli.
4. Membraneous croup should be considered diphtheria and subjected to the same regulations.

Large cities afford this means of diagnosis to all physicians, many States also endeavoring to do likewise. These regulations, if carefully and persistently followed out, would lead to the ultimate eradication of the disease, which more than any other has stripped countless firesides of toddling feet and babbling little tongues.

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#### ADVANTAGES OF BACTERIOLOGICAL INVESTIGATIONS TO BOARDS OF HEALTH.

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By B. Meade Bolton, M. D., Bacteriologist to the Board of Health,  
Philadelphia.

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In view of the establishment almost everywhere of public laboratories, I have concluded that the best use I could make of the opportunity you have given me to address you would be to say something in regard to the establishment of such laboratories and what, in my estimation, should be the character of the work demanded.

If a public laboratory is properly organized, there is no reason why the work done in it should be at all inferior to work done in any other laboratory. That this is the case is abundantly shown by the work that has come from some of the public laboratories in this country and in Europe. I think the usefulness of these laboratories depends largely upon the manner in which they are looked upon by

boards of health. If the board takes the view that a laboratory should be a drudge, it can expect only work of a perfunctory kind. I am convinced that the forlorn condition of many of the scientific men in public laboratories is brought about by their being forced into a hopeless rut.

But if the board is to repose confidence in its laboratory men, it must first be careful in the selection of its men. It seems to me not inappropriate in such a gathering as this to call special attention to the importance of selecting wisely. I have been frequently applied to to give instructions to men who have been selected to conduct municipal laboratories and this seems to me anything but the proper mode of procedure. The men who have already had the necessary training should be selected; they ought not to get their training after they are selected.

Having properly chosen your man and given him your confidence, what should you reasonably expect of the laboratory? I can give my answer to this question best by describing the work of the city laboratory in Philadelphia. This has been conducted in three directions, viz.:

1. The examination of pathological material sent in by physicians.
2. The preparation of diphtheria antitoxin.
3. Experimental work upon questions pertaining to bacteriology.

The examination of material sent in by physicians consisted for the most part in the examination of cultures made from the throats of persons supposed to be suffering from diphtheria, but material of various kinds has been also sent in. Specimens of sputum for examination for tubercle bacilli, urine, cultures from infected wounds and various tumors.

The system adopted for the examination of cultures of suspected diphtheria was modeled largely upon the system in use in New York City. After the laboratory was organized and gotten into working order, the following notice was sent to all physicians in the city: \*

#### DEPARTMENT OF PUBLIC SAFETY—BUREAU OF HEALTH.

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Division of Pathology, Bacteriology and Disinfection. Laboratory of Hygiene.

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Philadelphia, May 23, 1895.

Dear Doctor: The Bureau of Health is now prepared to make examinations of suspected cases of diphtheria. The culture tubes will be found at the police stations, named on the accompanying card,

and it is requested that where physicians avail themselves of the services of the laboratory that they should themselves inoculate these tubes from the throat of the suspected case, or should authorize a medical inspector to do so.

These cultures should be made in all cases as early as possible, for the specific organism often disappears from the throat during convalescence. The full benefit of a positive diagnosis can only be obtained where cultures are made at an early stage.

#### Directions for Making Inoculations.

Inoculations should be made by rubbing the cotton swab attached to the end of the wire contained in the test tube gently but freely against any visible exudate, and then drawing it over the surface of the culture medium without breaking the surface of the latter. The swab should then be replaced in the tube from which it was taken, and both tubes be replugged and put back into the box. Return the box to the station from which it was obtained, as soon as possible, or bring it directly to the laboratory. The tubes will be collected every afternoon, examined the following morning, and reports will be mailed by one o'clock p. m. The attending physician can obtain information, however, by telephoning directly to the laboratory after that hour.

Cases which prove to be false diphtheria will not be visited by the health inspectors unless requested by the attending physician. Cases, on the other hand, which prove to be true diphtheria will be subjected to the usual rules and regulations governing contagious diseases.

The bureau is also prepared to examine blood, urine, gastric secretion, sputum for tubercle bacilli, and other pathological material. Instructions and directions for inoculating the tubes and for collecting pathological material for examination will be gladly given at the laboratory.

All communications should be addressed to Dr. B. Meade Bolton, director of the laboratory, rooms 715 and 717, Bureau of Health.

By order of the Board of Health,

WILLIAM H. FORD, M. D.,  
President.

A. A. HIRST,  
Secretary.

In response to this circular physicians have availed themselves largely of the services of the laboratory.

The culture outfit for diphtheria diagnosis, a sample of which I show you here, consists of a tube of prepared culture medium and a tube containing a swab of cotton on an aluminum wire. I have found by experience that No. 14 wire is better for this purpose

than the thicker wire at first used. Accompanying the tubes is a little book in which the physician makes his notes of the case.\* A preparation of every case has been saved for reference and the books are also kept. You will notice that the book has a space left to be filled out at the laboratory with the results of the examination. These are denoted by signs stamped on with rubber stamps, the meaning of which are explained in the book itself.

The results of the examinations are communicated to physicians by means of one of the cards which I pass around. So much for the detection of diphtheria.

It has not been necessary to elaborate any particular system for the examination of other kinds of pathological material, such as sputum, urine, tumors and the like. A good deal of material of various kinds has been sent in, but reports have simply been written in each case.

Samples of water have also been examined.

So, to sum up, I should say that you should expect from your laboratory prompt recognition of cases of diphtheria, consumption, and some other diseases and if the usefulness should always be restricted to its present sphere this would surely justify the establishment of the laboratory.

The preparation of the diphtheria antitoxin is also considered a part of the work of such laboratories; and the preparation of antitoxins for other diseases must necessarily follow also.

For the benefit of those who are not familiar with the subject, I would say a few words in regard to this method of treating infectious diseases.

It is now known that many, if not all, infectious diseases are caused by the products of growth of microscopic organisms for the most part bacteria. These bacteria get into the body in various ways. They are taken in with the food or drink or through wounds in the skin, or are taken in with the breath. In whatever way they may be taken in they cause disease by growing and producing poisons that are now called toxins. If the animal recovers from the disease the toxins are neutralized in the animal's body by an antitoxin which is produced. Take, as an example, diphtheria. If the bacteria of diphtheria get into the throat and cause the disease, and the patient gets well, there is the production of an antitoxin in the body of the patient. In like manner, if the diphtheria bacilli or the products of growth of the diphtheria bacilli are injected into an animal there is an antitoxin produced in the animal. Now this antitoxin is not only of use in curing the animal in which it is introduced, but if it is drawn out of the animal it can be used to cure other animals or man. The antitoxin is found in such ani-

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\* A copy of this book can be had on application.

mals in the fluids of the body, notably in the liquid portions of the blood, but it is also found in the milk of lactating animals and elsewhere in the body. So the method of preparing the antitoxin for diphtheria consists in injecting, gradually, a large quantity of the diphtheria toxin into a large animal and then drawing off the blood of the animal. Of course there are many details and precautions to be observed that it is not necessary to go into here, but what I have stated above is essentially the process. As you all know, horses are universally employed for the purpose. A very clear and interesting description of the method of obtaining the antitoxin is given in an article by Dr. Charles B. Fitzpatrick in the New York Medical Journal, April 27, 1895.

The experimental work of public laboratories should be, I think, just now all directed towards the production of antitoxins for other diseases than diphtheria. Some diseases offer opportunities for good results in this direction.

It is apparent from the above that there is work enough for public laboratories and that they deserve general recognition and support.

The points I have wished to bring out in what I have said are these:

Be careful to select well-trained men for your laboratories, give them well-equipped laboratories, do not overburden them with drudgery and you will be amply rewarded. You can expect the prompt recognition of many infectious diseases, the preparation of diphtheria antitoxin, and in the near future probably the antitoxin for some other diseases as well, and finally, advances in knowledge of infectious diseases.

In opening the discussion, Dr. Benjamin Lee addressed the association as follows:

"Mr. President: You have well said that no more important subject could be offered before this association of health officers than the means for restricting the spread of diphtheria. You, of course, know why this is so important a matter just at the present time. I need hardly call your attention to the very great increase of diphtheria in this State during the past two or three years, or what have been the experiences of certain towns here and there. Certainly we have had an immense increase. I would say that in the last four or five years diphtheria has multiplied five fold in the State. At the present time it is the most terrible of communicable diseases with which we have to deal if we except consumption, which still keeps the lead. Next to that we must rank diphtheria. Scarlet fever which used to sweep off such large numbers of our children has for some reason or other become less alarming. Only now and then we have a severe epidemic; but I think if we go over our health

statistics we shall find that measles is killing more now than scarlet fever. Diphtheia, however, has a mortality as you have been told, of at least forty per cent., and with the use of the serum the mortality is still high. If, therefore, we can obtain the means for determining at the outset of any suspected case, that that case, however light, is a true case of diphtheria, dangerous to the other members of the family and dangerous to the community, it certainly becomes the duty of all health officers to make use of that means. Such a means we have at present and it is a matter of great mortification to the State Board of Health, that it has not been able to take hold of this matter as some state boards of health have done. We have applied more than once to the Legislature to give us a laboratory of hygiene in which investigations of all these questions could be carried on, and from which a helping hand could be extended to every board of health in the State in these matters of diagnosis of diphtheria and of consumption, for the means is equally applicable in both of these diseases. As indicating how very practical this matter is, and how easy it is for boards of health even at a distance to make use of it through the State Board of Health, I would like to refer to a case which occurred a few weeks ago in one of the interior towns of the State. A communication was received from the local board of health stating that one physician in the town claimed that he had in his practice diphtheria, in one and possibly in two families, while not another physician in the town had cases. They had cases of follicular tonsilitis, sore throat and such as that, which they recognized as not diphtheria. The other physicians felt that it was very strange that this one man should have diphtheria in his practice and no one else, and they remonstrated to the local board of health and held that an investigation should be made in order to prove to him that his cases were not diphtheria. The matter was brought to the notice of the county medical inspector and he also addressed communications to the State Board of Health, requesting that this physician should be reprimanded because he persisted in calling his cases diphtheria, as no one else in the town did. The physician himself took the only sensible means of deciding the case. He took specimens on cotton from the throats of his patients, and sent them at once to the Secretary of the State Board of Health, who immediately placed them in the hands of the assistant bacteriologist, and within thirty (30) hours the cultures showed the cases were virulent diphtheria. The report was sent by telegraph both to the physician and to the local board of health. Now, what was the consequence of this? That within a couple of weeks the Secretary was applied to by the local board of health for antitoxin, and the second day after the first application came a second request, showing that not only had

this physician who had correctly diagnosed his cases had diphtheria in his practice, but undoubtedly some of the other physicians were treating as simply sore throat, diphtheria. This examination could no doubt be multiplied fifty fold all over the State. The State Board of Health has deeply felt its responsibility in this matter, and although it has been unable to get such an establishment as desired, it has determined to do the best that it can under the circumstances, and it proposes to issue a circular at an early date on these lines—that is, to offer to boards of health and physicians the services of its laboratory in Philadelphia, and to make a charge per annum according to the population of the town. Upon application a swab will be sent out, and with it instructions for rubbing over the affected parts, to secure specimens of the disease germ if present.

"It was felt that in many cases it would not be wise to attempt to send the culture tubes through the mail and, therefore, we adopt the plan of sending sterilized swabs. These swabs will be placed in the tubes and returned at once by express. The report will be returned in twenty-four hours. Owing to the length of time the live bacilli will continue to infest the throat after a case has apparently recovered, it makes it very important that from time to time, for a few days or even weeks in some cases after apparent recovery, swabs should be applied and microscopic investigations should be made.

"The Board has instructed its assistant bacteriologist to prepare directions for using the swab, and for the reports which are to be made out at as early a date as possible. A circular will be sent to all boards of health throughout the State as well as to physicians, in order that they may understand that they can avail themselves of this opportunity.

"It will be seen that it is the intention of the State Board of Health to put a sufficient number of these sterilized swabs in the hands of every board of health in the State, and that on receiving notification from any board that it desires to be so supplied, the number suggested will be sent, the idea being that a board of health of any city or town not having a bacteriologist of its own and desiring to avail itself of this Board, will notify the Secretary of the State Board of Health whenever it desires a new supply of swabs. They will then be furnished in such quantities as are desired. and inasmuch as it will undoubtedly create considerable expense, it was felt that the proposed arrangement by the year should be made in order to put the Board in possession of funds to at once supply any demands that may be made upon it."

M. G. Lippert, Phoenixville: "I think that the local boards of health in the boroughs will be only too glad to avail themselves of the assistance offered on the part of the State Board of Health, and I think that I may say for our board at Phoenixville, that we wel-

come the offer made by the Secretary of the State Board of Health, and we shall no doubt avail ourselves of that offer. I can only hope that other boards will do the same, and I further express the hope that we may be able to prevail upon the next Legislature to be a little more generous toward the State Board of Health, and toward the local boards in this instance."

H. H. Whitecomb, M. D., Norristown: "I was very much pleased with these two papers, and agree with Dr. Pitfield that we need a more exact method of diagnosis. I, at the same time, hesitate to express an opinion that is contrary to my own belief. I do not like to acknowledge the fact that I cannot diagnose diphtheria. I am convinced that many cases are not properly diagnosed. While we believe bacteriologists are able to aid us in making diagnosis, we are not convinced that antitoxin serum is going to help us very much."

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## THE EFFICIENCY OF ANTITOXIN AS A REMEDIAL AGENT IN DIPHTHERIA.

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By Joseph McFarland, M. D., Philadelphia.

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I hope to present the subject of antitoxin to you to-day in such a manner as to convince the most skeptical mind of its efficiency as a remedial agent in diphtheria.

You are all familiar with the fact that vegetable and animal cells are capable of producing powerful poisons; thus, in the vegetable kingdom we find the poppy producing morphia, the castor oil bean producing ricin, the calabar tree producing abrin, and many other examples will occur to your own minds. In the animal kingdom the best examples I can give you would be the cells of the venom glands of the rattlesnake and cobra, which you know to produce poison deadly to man.

The next thing I shall point out to you is that man and animals can accustom themselves to these poisons so as to endure many times the original injurious quantity; thus, we are familiar with the fact that to those who have not used tobacco, smoking a single cigar causes physical prostration, while the habituант can smoke a dozen with impunity. You are all acquainted with the fact that there are opium eaters who can take many grains of morphine in the course of a day, experiencing an exhilarating instead of a toxic effect. It has also been clearly shown that the hog, which in the

early days of our American civilization was used to rid infested fields of rattlesnakes, possessed no natural immunity to snake poison, but because of the slow absorption from the thick layer of fat beneath the skin, gradually became accustomed to the poison introduced beneath the skin, by the repeated bites of snakes. It is also highly probable that the immunity possessed by snake-charmers to the poison of the cobra depends upon the fact that they have frequently suffered from the introduction of small quantities of the poison, by superficial bites acquired by handling the snakes. The peculiar tolerance to poisons in such cases remained inexplicable until a very few years ago, when Emil Behring Stabsarzt in Berlin discovered that in the bloods of animals which were accustomed to the poisons of diphtheria and tetanus there occurred a new substance, which not only was capable of protecting the animals in whose body it was generated, but also of protecting other animals, into whom the serum of the protected animal was injected.

It must be clearly understood that antitoxin (as this new substance is called by Behring) is a new substance, having nothing to do with the normal blood. The effect of the antitoxin seems to be to stimulate the body cells in such a way as to enable them to endure the poisons mentioned; they do not act as chemical neutralizing agents, as has been clearly shown by experiments; the toxin remains unaltered after having mixed with a sufficient quantity of antoxin, to save the life of the animal into which it is injected.

The next point I desire to make is that the diphtheria antitoxic serum does not stand out conspicuously as one single remedial agent, but is one of a group of similar bodies. It has been shown by Fraser and Calmette that in the animals accustomed to rattle-snake and cobra poisons, antitoxic substance specific for their particular poisons are generated, and are capable of protecting other animals into which they are introduced.

Ehrlich has shown that when animals are immunized to very large doses of ricin and abrin, antitoxins, namely, anti-ricin and anti-abrin, are produced in sufficient quantity to protect the lives of non-immunized animals. Behring, Kitasato, Wernicke and others have shown that the anti-tetanus toxin and anti-diphtheria toxin, now so well known, always occur in the blood of animals immunized to tetanus and diphtheria.

The toxin of diphtheria is the poison produced by the diphtheria bacilli, or, as we might express it, is made by the diphtheria plants, the well known organisms which occur in the diphtheritic membrane; the symptoms of diphtheria are not due to the lesion of the throat, but to the circulation through the blood of these poisonous substances produced by the bacilli. In treating diphtheria it is not the condition of the throat, but the general toxæmia, to which at-

tention must be directed. It is known to every physician that poisons can only be combatted by their antidotes, and unfortunately it is known to physicians and laymen that for the poisons which are fatal in the specific diseases, that is, scarlatinia, diphtheria, small-pox, typhoid fever, etc., there are no antidotes, but that the individual must die, unless in some way his system is capable of producing a sufficient amount of antitoxin of some kind or other, to annul the effects of the poison in his blood.

Each antitoxin is antidotal for but one poison, that is to say, tetanus antitoxin for tetanus toxin, and diphtheria antitoxin for diphtheria toxin, and so on. Antitoxins have no effect whatever upon the vitality of the diphtheria bacilli or upon any bacilli.

In cases of diphtheria which have recovered after the use of antitoxin, an examination shows the throat to contain bacilli quite as virulent as in the beginning, but remembering that the symptoms of the disease are due to the circulation of the poison through the blood, we understand the recovery from the disease when we remember that the poison is no longer poisonous after the administration of antitoxin.

From this brief survey of the salient points in the theory of antitoxin, I wish to turn to what seem to be the most particular questions for a body like this to consider. It is rather their function to make sure that the community be provided with good antitoxin (that is, a strong antitoxin) in a condition of proper preservation, than to decide in general upon the efficiency of antitoxins as a remedial agent. Upon this latter question there is no possible doubt; the statistics of the world, comprising more than 20,000 reported cases, show a diminution of the death rate in diphtheria patients from 45 to 50 per cent. before the antitoxin was used, to but 10 to 15 per cent. since it has been used.

First, the antitoxin used must be sufficiently strong; it is impossible to estimate absolutely the strength of a biological product, therefore, no two persons investigating the same product will ascribe to it exactly the same strength. The reason for this is very simple; first of all, the test for determining the strength of an antitoxin depends upon an accurate knowledge of toxin, and the smallest certainly fatal dose of the toxin must be calculated. You observe, ladies and gentleman, it is not a certainly fatal dose of the toxin that is to be arrived at, as a gallon of diphtheria toxin would certainly be a fatal dose for a guinea pig, but the determination of the smallest certainly fatal dose is the matter which requires great nicety of calculation, considerable time and sacrifice of a large number of animals. The man who determined most accurately the minimum fatal dose, will find the greatest strength in the antitoxins; the man who is careless concerning the minimum fatal dose and

has it but a little larger than it really should be, will find the anti-toxin correspondingly weaker.

Added to this consideration of the minimum fatal dose must be the personal equation of the experimentor and the individual susceptibility of the guinea pig. That which is known as a normal serum is one of which one-tenth of cc. will protect a guinea pig against ten times the smallest certainly fatal dose of toxin. The serums ordinarily employed for therapeutic purposes are 100 times as strong as these.

I hope I have made very clear, in this brief statement, the fact that inexperienced persons cannot test diphtheria antitoxin serum, and that the small amount of difference in the test is a matter to be expected, no matter who works upon it.

I have tested many of the serums which are upon the market, and have found that, with one exception, they have the strengths claimed. Very fortunately the exact strength of the antitoxin is of no importance from a therapeutic consideration, because the exact required dose can never be estimated. You will understand that to give an exact dose of antitoxin would mean to know exactly how much poison was to be neutralized in the blood, while this is a matter which can never be determined. There are no doubt cases in which we give ten times as much antitoxin as is really necessary, at other times no doubt we give one-tenth as much as is necessary.

The preservation of the antitoxin is also a matter of great importance. Diphtheria antitoxin serum does not easily spoil; I suppose I have seen from 25 to 50 gallons of antitoxic serum, some of this serum has been in my hands for nearly a year and yet I have never seen a single drop of serum, prepared by myself or anyone else, that was in a condition of decomposition.

The scientific minds among you are doubtless aware that freshly drawn blood is germicidal and retains its germicidal power for a considerable length of time; it would be unwise, however, to depend upon this natural action for the preservation of a product which is to be sent to the ends of the earth, to be kept for varying lengths of time, from a month to a year in all probability, and to be used by the wise and unwise as well; therefore, it is best to add to the serum some substance which shall not interfere with its virtue, which shall be harmless to the person into whose system it is to be injected, and yet which will preserve the serum from the action of putrefactive micro-organisms. Various substances have been employed. I have the pleasure of showing you serums which have been preserved by the addition of camphor, of 1 per cent. of chloroform, 1 per cent. of salicylate of sodium, of 0.5 per cent. of carbolic acid and 0.5 per cent. of trikresol. Of these various substances I

prefer the carbolic acid and trikresol, because their antitoxic actions are much more certain than the others; both of these agents when added to the serum cause a rather copious, flocculent precipitate, which must be removed by filtration, but which does not interfere with the virtue of the serum as a remedial agent. Trikresol gives the filtered serum a peculiar opalescent quality and slightly different color. My personal preference is for trikresol as a preservative, since it is three times as germicidal as carbolic acid, and less than one-third as poisonous.

I must mention some of the objections that have been brought up against the use of antitoxin in combatting diphtheria. At one time it was reported that sudden death was liable to follow its injection. Its most bitter opponent will at the present time scarcely urge upon us that sudden death is more likely to follow the use of antitoxin than diphtheria treated without antitoxin.

Some one has said that paralysis is apt to follow in the cases of diphtheria where antitoxin is used. I think the experiences of the medical profession will bear me out that paralysis is likely to occur in any cases of diphtheria, and that the antitoxin is unjustly condemned as the cause of it.

It was formerly also urged that the antitoxin has a destructive action upon the kidneys and that nephritis or albuminuria followed its administration, but later statistics have shown that these troubles are less numerous in cases treated with than those treated without antitoxin.

I have also heard it urged (generally by laymen who very naturally hesitate about having a large quantity of material injected into the bodies of their children) that there is a danger of cases which are not diphtheria being made diphtheria by the injection of antitoxin. Why, ladies and gentlemen, what has antitoxin to do with diphtheria? The antitoxin is horse's blood, there are no diphtheria germs about it, cannot be any in it. It would be quite as possible, yes, quite as probable, for one to have a castor oil plant develop in his intestines, after taking a dose of castor oil, as for a child to get diphtheria from an injection of antitoxin.

Dr. Bolton, in his paper, has already given you in brief, the method for the production of antitoxic serum, but in order to make more clear to you this illustration of the castor oil plant which I have mentioned, let me show you that in the preparation of the serum, the cultures of the diphtheria bacilli, which are to furnish the toxin, are first killed by the addition of a germicide, and then filtered through unglazed porcelain. This perfectly sterile, poisonous substance which has been but is no more a culture of diphtheria, is injected in increasing quantities into the subcutaneous tissues of a

horse, until after a varying period of time, experiment shows us that this blood contains antitoxin. The horse is then bled from a vein, the blood allowed to coagulate and the clear serum which is the antitoxin pipetted off and preserved by the addition of trikre-sol. It is clear to you all that the horse never had diphtheria, that in his blood no living or dead micro-organisms were ever present, and, therefore, that in the serum from his blood, with or without the addition of the germicide, which is added to it to protect it from future contamination only, there would be nothing that could produce disease. The castor oil is made from the castor oil bean, diphtheria antitoxic serum is not made from the diphtheria plant, but is a new substance, derived from the horse's blood. You can see how much more possible would be the former than the latter in my illustrations.

The last objection to its use is that it does not in all cases give the results claimed for it. We cannot accept the statistics of those who have used it in a dozen cases, against those who have used it in a hundred, nor can we place any reliance upon statistics of those who use it in combination with other remedies.

Its action upon the lower animals is invariable; its action in proper doses (large enough doses) in the early stages of the disease, as it affects children, shows almost no fatality. Every case cannot be cured for two reasons: first, because we do not know how much toxin is in the blood, and, therefore, frequently do not administer enough of this antidote; second, because the toxin in many cases produces a rapid disorganization of the nervous centers, which can never be regenerated; that a few cases must die for the reasons given is very small ground for a rejection of the remedy, the results of whose administration by the most careful men, in all parts of the world, has shown its efficiency to be so extraordinary as to warrant the assertion by some that it is God's latest and best gift to his children.

#### THE PRODUCTION, TRANSPORT, SALE AND DELIVERY OF DAIRY PRODUCTS SHOULD BE UNDER THE SANITARY CONTROL OF THE LOCAL BOARD OF HEALTH WHERE THESE PRODUCTS ARE CONSUMED.

By Edward O. Shakespare, M. D.

The title of this paper, prepared in response to an invitation of your committee, expresses in general terms the opinion which the writer has formed after closely studying for some years the relations of the general milk supply to the public health.

The liability of many of the products of the dairy—and especially milk—to become in one way or another infected with the germs of dangerous diseases before they reach the consumer hardly needs discussion or elaboration at the present time. Numerous careful and impartial investigations by most competent observers and experimenters in America and in Europe have placed this fact beyond reasonable dispute. Many an epidemic of typhoid fever and of diphtheria, and a considerable number also of scarlet fever, have been traced to an infected milk supply. Cholera infantum, that veritable scourge of young children living in the cities, has its chief origin and factor of mortality in a milk supply vitiated by the presence and activity of numerous extraneous bacteria. The existence of tuberculosis in the first years of life may be fairly attributed in the majority of instances to the consumption of milk infected with the bacillus tuberculosis. What relation measles, whooping cough and influenza may have with the dairy still remains undetermined; but viewed in the light of the present knowledge of the etiology and mode of spread of the last three diseases, it seems possible enough that they also may ultimately prove to be traceable in many cases to the consumption of contaminated milk.

There is ample reason, therefore, not only to justify but even to necessitate an effective intervention of the health authorities to regulate and control, from the standpoint of public sanitation, the production, handling, sale and delivery of the products of the dairy.

What are the essential elements of such an effective intervention? They would appear to be comprised in the following propositions:

First. The intervention should begin at the beginning and continue until the consumer is reached.

Second. The intervention should be executed first and last through the accredited and responsible agents of the local board of health of the consumer.

To undertake to elaborate these general principles in much detail were, perhaps, beyond the proper scope of such a paper as this. But it may not be amiss to throw out some outline suggestions.

As to the first of these essential elements, it would be well to keep in full view two fundamental truths:

(a) The dairy farm is the one chief source where milk becomes infected.

(b) The dealer's shop for reception of the milk supply and its distribution to the consumer, is the other chief source of contamination.

Unless the local board of health can prevent infection at both of these chief resources, it need not hope to do very much toward great curtailment of the morbidity and mortality due to the use of the infected milk among the consumers within its district.

But, unfortunately, it is only one of these chief sources of infection that health boards now undertake to watch more or less closely—the shop of the milk dealer. If the source of milk production—the dairy farm—is to-day reached at all by the local health board, it is only indirectly and most ineffectively; and yet it is precisely here that such infections as that of typhoid fever, diphtheria and tuberculosis most frequently find entrance into the milk.

A sanitary inspection—embracing the condition of the milch cows, their food and surroundings, the purity of the water supply, the health of the dairymen, and the mode of collecting and handling the milk at the farm—made at times unexpected by the milk producer, and repeated at varying intervals, for the purpose of excluding diseased animals from the dairy herd, and of obviating all kinds of infection in the milk at this source, would seem to be absolutely essential for adequate protection of the health of the consumer. (It goes without saying, that the application of the tuberculosis test—the only reliable means at present known for the detection of tuberculosis in apparently healthy cattle—should form the basis of exclusion of this very prevalent disease from the dairy herd.) And, of course, a rigid sanitary supervision of the shop and operations of the milk dealer at the other end of the line is equally necessary.

As to the second of these essential elements, the health interests of the consumer, demand that the sanitary supervision and regulation of the milk supply shall be thorough and comprehensive, above all that these inspections—of such grave importance to him—shall be made by agents whom he can most rely upon and trust as least likely to be guided or influenced by commercial interests or mercenary motives. It requires neither great acumen nor much experience only a little insight into the carelessness and gross frauds which so commonly disgrace the general milk trade of the State of Pennsylvania, to arrive at the firm conviction that the only inspectors who could be safely trusted by the consumer would be those appointed and controlled by the local board of health, the authority—next to the consumer himself—chiefly and most nearly interested in the conservation of the public health of the district. Inspectors appointed and controlled by such a disinterested and competent authority should, from the nature of the case, be more earnest and impartial in the performance of duty, and far less amenable to the venal temptations of interested producers and vendors, than would be the agents of such a service whose employment is dictated or influenced by trade interests. In fact, it seems to be self-evident that sanitary inspection of dairy farms for the protection of the health of the consumer, unless it be performed under the direction and control of the guardians of the public health, must certainly prove to be illusive.

The best machinery by which to exercise such a sanitary control and supervision of the milk supply of localities as we have thus briefly suggested in outline would seem to be that afforded by a proper system of licenses to milk producers and milk vendors, the licenses to be grantable or revokable by the health authority within the limits of whose jurisdiction the consumer resides, or the consumption takes place. Such licenses should be of nominal cost to the milk producer and more expensive to the milk vendor (for the reason that the invested capital of the milk producer is usually much greater, and the profits much less than are those of the milk dealer). These licenses should be issued to the applicant on condition that the inspectors of the local board of health of the consumer have free access at all reasonable times to the premises of the holder of the license, for the purpose of making such sanitary inspection as the respective board of health may authorize and direct. All milk from unlicensed producers and vendors should be prohibited entrance, sale, handling or distribution within the health districts in question.

Some may think, and, indeed, the objection has been urged, that such a system of comprehensive inspection of the whole operations of the milk industry, engaged in supplying milk to a community, would constitute an unwarranted interference with the business and rights of the individual citizen. But it has been truly said that the business of the production and sale of the milk supply is one of the most dangerous of human occupations. Certainly this truism must furnish ample warrant for a wise, just and reasonable regulation by law of the conduct of this dangerous business.

Assuredly the people likely to be injured through the careless or fraudulent prosecution of this highly dangerous occupation have the right to secure their protection by appointment and control of inspectors on whose competency and trustworthiness they can rely:

M. G. Lippert, C. E., Phoenixville, opened the discussion by referring to an ordinance under which they had been working and referred to the act of 1885, applying to cities of the third class, on which that city had based its ordinance except with regard to penalty, which could not be applied to their ordinance, but that they could impose such fines as they saw fit. This ordinance also required the registration of milk dealers, and such fees should be collected as the board of health may direct, and a license issued for \$2.00. The first year nearly all the milkmen, excepting one or two, complied with the ordinance. They claimed that the board of health had no right to collect fees and require licenses and sooner than pay, they would fight in court. We consulted our solicitor about it. He said we had a right to insist upon it under our ordinance, but

after looking further into the matter he advised us not to enforce the ordinance, as he could not find any authority for us to insist on milkmen taking out licenses.

"The second year we could not require a license, but we insisted on licenses being taken out. We have them all in now except one or two, and I think they will not resist the requirement any further. It would be interesting to find out whether boards of health have the right to insist on registration on the part of milk dealers, which is only another form of a license.

"While I am speaking about milk, Mr. President, I would like to say a few words in connection with the legislation bearing on the question of milk inspection regulating the sale of milk. It seems that the laws which have been enacted by our Legislature are very unsatisfactory and deficient. There is an act dated April 20, 1869. This act authorizes the cities and boroughs to provide for the inspection of milk. Under this act, of course, councils may enact an ordinance bearing on the subject; but you all know how unsatisfactory it is to work on an ordinance without having a law to back it up, that provides a penalty in the shape of imprisonment or fine or both.

"On May, 1885, another act was passed. This act provides that any person or persons who shall knowingly sell or exchange any milk which has been adulterated, etc., shall be deemed guilty of misdemeanor, etc. The next provision is that relative to the adulteration of milk and marking of the milk.

"Next an act was passed in July, 1885, applying to cities of the second and third class. The act is quite unsatisfactory in its provisions. I will just give you the provisions very briefly. The act prohibits the adulteration or selling of impure milk. I think it is pretty well known about the milk exchange and the failure of the subsequent attempts to extend this bill so that it would apply to the Commonwealth, has been attributed to the powerful influence of that lobby.

"In the session of 1893, an attempt was made by a codification of what was called a 'pure food act.' Another attempt was made during the recent session of the Legislature, and was strongly backed up by the board of health of Philadelphia, and I think the State Board of Health endorsed the act too, but it failed. It would be well to repeat the attempt at the next session of the Legislature and try to extend the application throughout the Commonwealth.

"Another feature has come to my knowledge; that inasmuch as that act only applied to cities of the second and third classes it has been declared unconstitutional by the city of Pittsburgh.

"An act was passed at the recent Legislature as is generally

known as the 'pure food act,' which, although it does not attempt to establish a standard for milk it at least provides against the adulteration of milk. Section one defines what shall be considered adulteration.

"Under this act the board of health of Philadelphia brought suit against the sale of separated milk. It is the case known as the Commonwealth vs. Huffnell, and it was the case of a party selling separated milk. This party was prosecuted for selling separated milk under this act, and the court charged the jury that if they thought that they were convinced that the milk had really been separated milk they must convict the defendant, but if it was simply skim milk they could not. The jury found that the party had been selling separated milk and the defendant was convicted. This seems to be a very satisfactory termination.

"I might suggest that a new attempt might be made at the next session of the Legislature to enact a bill in behalf of the imperfect milk inspection.

The chair would beg to suggest that this subject might be referred to the Legislation Committee, that they consider the subject and prepare some legislation to be offered at the next meeting of the Legislature.

"The act of 1885 was a most excellent one, but referred only to cities of the second and third class.

"Our board of health had occasion to bring suit under the provisions of that act for its violation, and our court decided it was unconstitutional for the reason that it was 'special' legislation, only applying to cities of the second and third classes, and in doing so complimented the bill very highly and expressed regret that it was incomplete and unconstitutional.

"Mr. Beitler, director of public safety, Philadelphia, took up that subject last winter and prepared a bill based on the act of 1885, providing that it should apply to the entire Commonwealth, and it was offered in the Legislature and referred to the Committee on Public Health and Sanitation in the House. After considerable delay, Mr. Beitler succeeded in getting a hearing before the Committee and that he had the arguments in favor of the bill, but unfortunately the milkmen had the votes. It is worth a trial to get a good milk act passed, and I beg the subject be referred to the Legislative Committee."





